2016 Inspector Association Winter Updates

WI Commercial Building Code Frequently Asked Questions

DSPS Moderator

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Question 1: I have a client who wishes to convert their existing barn into an assembly facility that they could rent out for weddings, class reunions, etc. They would not serve alcoholic beverages, but the renters could provide them. Same with food service, not provided by the owners but could be catered in by renters. There is no indoor plumbing. Portable toilets would be provided for events. There would be no fire suppression system. No HVAC system, just natural ventilation and operated seasonally. Is this permissible? Are there special codes for this type of facility? Thank you in advance for your reply!

Answer 1: Per SPS 366.0101(2)(a) where a building or portion of a building that has not been previously occupied or used as a public building or place of employment is to be changed to an occupancy or use that constitutes a public building or place of employment, the building or portion thereof shall comply with the IBC for new construction.

The building would have to meet all of the current requirements of the IBC, including structural, accessibility, fire suppression, egress, and mechanical systems to name a few of the major items.

In addition, the department provided the following communication in June 2015 to interested parties laying out options for these types of facilities.

http://dsps.wi.gov/Documents/Industry%20Services/Forms/Commercial%20Buildings/Barn%20Letter.pdf

DATE: June 2015

RE: Use and Occupancy of Repurposed Agriculture Buildings

TO: Owners of Repurposed Agriculture Buildings, Building Designers and Contractors and Municipal Fire and Code Officials

FROM: WI Department of Safety and Professional Services (DSPS)

Over the course of the last few years, there has been a growing interest and desire on the part of many individuals throughout the state that own repurposed agriculture buildings to use these buildings for purposes such as hosting weddings or other public events.

There are many questions about what the Wisconsin Commercial Building Code (Code from here on out) allows for and requires in order for these buildings to be used for nonagricultural purposes. **Note: Other requirements may or may not apply. Please check with your local municipality on other requirements such as zoning, liquor license, etc.**

The following is a series of "If, then" statements designed to educate you as to the various situations that may exist:

1.) If a repurposed agriculture building is being used as a public building or place of employment, then the building must be brought into compliance with the Code**.**

2.) If a building owner wishes to use their building for public use or as a place of employment on a temporary basis, then they may pursue getting a temporary use permit from their local municipality as allowed by the Commercial Building and Fire Prevention Codes. (See **SPS 361.03(12) and SPS 314.01(5)** for more details.) Municipalities are not required to issue a temporary use permit.

3.) If a repurposed agriculture building is only being used for personal use, then the building is not required to become compliant with the Code.

4.) If DSPS has issued any orders against a building, then the municipality may not issue a temporary use permit that would conflict with the Department's orders. **WI Statute 101.02(7)(a)**

5.) If a building owner has already submitted building plans to the department for review and approval, then the building plans need to be approved and followed prior to the use of the building and a temporary use permit from a local municipality is no longer allowable. **WI Statute 101.02(7)(a)**

6.) If a building owner or designer is not able to comply with the letter of the code, then they may petition the Department for a variance to the code. Variances are only granted when the petitioned requirement is offset by an equivalent requirement. (Click here to find the variance application.)

7.) If a building owner would like to formally sit down with the Department and go through the specific code requirements, they may e-mail the department at DspsSbBuildingTech@wi.gov and ask for a preliminary review. (Note: Depending on the complexity of and time required to address your issue, a preliminary review fee may be charged.)

Question 2: Is it possible to create an opening in a common wall to connect adjacent buildings on separate parcels owned by the same or different owners?

Answer 2: Ownership is irrelevant. The answer is no if a property line exists at the wall between the buildings. IBC s. 706.1.1 requires a wall between two buildings on a lot line to be constructed as a fire wall without openings and creates separate buildings (for purposes of height and area, fire protection system requirements, class of construction, etc.). What you have described would require either a petition for variance or removal of the lot line if the parcels are owned by the same individual.

Alternatively, it may be possible to construct two connected buildings, under separate ownership for financial and management purposes, on a single parcel through a condominium agreement.

Party Wall Petition Discussion

Code Section: IBC 706.1.1, 1014.2.1
Code Edition: 2009

Code Requirement: 1) Walls built on a lot line shall be built as a firewall and have no openings. 2) Exit access shall not pass through adjacent tenant spaces.

Variance Requested: Allow an opening in a party wall to connect buildings on separate properties

Options:

- The wall and opening may or may not be fire-rated. If fire-rated, the buildings will be considered as separate buildings. If not fire-rated, the two structures will normally be considered as one building. In which case, the building will be classified with the lowest class of construction present. It must meet applicable area limitations, and other occupancy limitations and separations as appropriate.
- The department will consider whether the opening may provide exit access for either side dependent upon other egress provisions along the route to the exterior of the building.

Typical Conditions of Approval:

- Both owners must want the opening. In addition to the petition submitted by one of the owners, a letter from the other owner must be submitted indicating agreement to have the opening. Draft easement(s) shall also be provided.
- If it is desired to have the opening serve as an exit or exit access for either structure, then the building owner providing exit access shall agree in writing to that and potentially other requirements or conditions imposed on the egress route to the exterior from their space.
- Either the petitioner, in the petition documents, or the other owner in the letter of agreement, must indicate that they will be responsible for closing the opening per the code in the future should either owner no longer want the opening.
- A copy of the petition approval letter must be filed with the Register of Deeds on the file for both properties.
- The local code official shall required proof of recordation of the petition and easement(s) prior to allowing occupancy.

Question 3: What is required to be included with plans submitted for review and approval when the building is less than 50,000 cubic feet in volume and therefore plans are not required to be prepared, signed and sealed by a registered design professional?

Answer 3: The same minimum requirements for demonstrating code compliance apply whether a building is more or less than 50,000 cubic feet. The only thing that changes is the involvement of a registered professional and signed and sealed documents.

If this is a new building and it is heated, the plan submittal must include structural calculations, building envelope calculations, and heat loss calculations.

The department provides a plan submittal checklist as a guideline to individuals submitting plans for review and approval …
http://dsps.wi.gov/Documents/Industry%20Services/Forms/Commercial%20Buildings/PlanSubmittalCheclists/Building%20Plan%20Submittal%20Checklist_2009%20ICC.pdf

Question 4: We have several CBRFs coming in shortly. They vary from 5-8 beds. The contractor believes that this would fall under UDC, but I don't see the exception in 361.02. I believe it would be under IBC. Can you let me know if there is an exception for CBRFs with 8 persons or less or what the cutoff would be to be under UDC requirements? I'm just checking if I missed something or what. I would rather get it correct now than fix something later.

Answer 4: Please review SPS 362.0400 (4) which would clarify that CBRFs with 5-8 occupants would be under the UDC.

COMMUNITY-BASED RESIDENTIAL FACILITIES. A newly constructed building or portion thereof that is a community-based residential facility serving 5 to 8 unrelated adults shall comply with chs. SPS 320 to 325 instead of all other requirements of this code.

In addition, 2015 WI Act 55 transferred sole plan review authority for CBRF's and Hospices to the Department of Health Services (DHS). The following information regarding the transfer was sent out via department customer email lists. Small CBRF's as above falling under the UDC would be under joint jurisdiction/authority of the local municipality/UDC Inspection Agency and DHS.

With the enactment of the 2015-2017 Biennial Budget (2015 WI Act 55) building plan review of all Community Based Residential Facilities (CBRF) and Hospices has been transferred exclusively to the Wisconsin Department of Health Services (DHS) effective January 1, 2016.

- Plans for new CBRF and Hospice buildings and alterations or additions to existing CBRF and Hospice buildings received by the Department of Safety and Professional Services (DSPS) on or after the effective date of January 1, 2016 will not be reviewed by DSPS and will be returned to the submitting party.
- Revisions to plans previously approved by DSPS, which will be received on or after the effective date of the transfer, should be submitted to DHS for further review and approval.
- For CBRF and Hospice facilities where building plans have been submitted to and approved by DSPS prior to January 1, 2016, DHS will complete the review of all associated systems and components (HVAC, fire protection systems, structural components, etc.) if the systems and components are received on or after January 1, 2016. DHS will assume responsibility for any building inspections that come as a result of the DSPS plan review.
- Note: Building systems or components including plumbing, boilers, chillers, refrigerant systems, elevators, pools, etc. will continue to be under the review and inspection of DSPS regardless of whether DHS or DSPS reviews the building plans.

Please see the attached diagram which illustrates DSPS or DHS plan review authority.

Questions regarding plan review jurisdiction for facilities which include a licensed CBRF or Hospice may be directed to the DSPS commercial building program general technical mailbox using the following email address: DSPSSBBuildingTech@wisconsin.gov

DSPS Division of Industry Services

Question 5: Are landings or stoops required outside of exit doors and are they required to be frost protected?

Answer 5: Yes

IBC s. 1008.1.5 and 1008.1.6 require that there shall be a floor or landing on each side of a door, the landings shall be at the same elevation, and the landings shall be level. Further, s. 1008.1.1 requires door openings to provide a clear width of 32” measured between the face of door and stop with the door open 90 degrees. The IBC does not contain definitions of ‘landing’ or ‘floor’ so it could be debated whether ‘grade’ complies. ICC/ANSI A117.1 s. 302 has requirements for floor surfaces and changes in level at accessible means of egress that seem to preclude ‘grade’ as a floor or landing.

Question 6: We are constructing a new type VB unsprinklered B occupancy building and the corridors are required to be fire rated per 1018.1. Can we build the fire rated corridor walls on top of a non-fire rated floor and supporting construction?

Answer 6: Yes. IBC s. 1018.1 requires corridor walls to be constructed as fire partitions. IBC s. 709.4 continuity requirements for fire partitions states ... “The supporting construction shall be protected to afford the required fire resistance rating of the wall supported, EXCEPT for wall separating tenant spaces in covered mall buildings, walls separating dwelling units, walls separating sleeping units and corridor walls, in buildings of Type IIB, IIIB, and VB construction.

Question 7: I am remodeling a large portion of a building or adding on to an existing building, does the whole building have to meet the requirements of the International Energy Conservation Code?

Answer 7: No. There may be several options or exemptions for compliance.

- The entire building would not need to meet the requirements of the IECC. However, all altered elements, unless meeting an exception, shall comply with the prescriptive requirements of the IECC.
  - DSPS 366.0607 provides a number of exceptions for altered elements.
- Alternatively, one may choose to demonstrate the entire building complies with the IECC. For example, using ComCheck allows tradeoff's and some altered elements may be allowed to not meet the prescriptive requirements or even be worse than the existing elements.
- An addition must comply with the IECC prescriptive requirements or may use ComCheck and if the addition is unable to pass one might choose to analyze the entire building if the existing building has fewer windows or better insulation than the addition.

SPS 366.0607 Energy conservation requirements. Substitute the following wording for the requirements in IEBC section 607.1:

(1) ADDITIONS, ALTERATIONS, RENOVATIONS OR REPAIRS. Except as specified in sub. (2), additions, alterations, renovations or repairs to an existing building, building system or portion thereof shall conform to the provisions of IECC as they relate to new construction without requiring the unaltered portions of the existing building or building system to comply with the IECC. Additions, alterations, renovations, or repairs shall not create an unsafe or hazardous condition or overload existing building systems.

(2) EXCEPTIONS. All of the following need not comply provided the energy use of the building is not increased:

(a) Storm windows installed over existing fenestration.

(b) Glass only replacements in an existing sash and frame.

(c) Existing ceiling, wall or floor cavities exposed during construction provided that these cavities are filled with insulation.

(d) Construction where the existing roof, wall or floor cavity is not exposed.

(e) Reroofing for roofs where neither the sheathing nor the insulation is exposed.

(f) Replacement of existing doors that separate conditioned space from the exterior shall not require the installation of a vestibule or revolving door, provided, however, that an existing vestibule that separates a conditioned space from the exterior shall not be removed.

(g) Alterations that replace less than 50 percent of the luminaires in a space, provided that such alterations do not increase the installed interior lighting power.

(h) Alterations that replace only the bulb and ballast within the existing luminaires in a space provided that the alteration does not increase the installed interior lighting power.

(3) REROOFING. This is a department rule in addition to the requirements in IEBC section 607: Roofs without insulation in the cavity and where the sheathing or insulation is exposed during reroofing shall be insulated either above or below the sheathing.

Question 8: For an addition or alteration to an existing building where the addition or altered area does not include toilet rooms, when are the existing toilet rooms required to be evaluated and altered to comply with accessibility requirements?

Answer 8: Almost always the toilet rooms must be altered to provide accessibility unless the cost is prohibitive. Any scope of work, except repair, within the IEBC requires accessibility upgrades unless meeting an exception …

- Level 1 Alteration: see s. 605.2 for alterations to primary function space.
- Level 2 Alteration: see s. 706.1 which refers to s. 605.
- Level 3 Alteration: see s. 806.1 which refers to s. 605 (and 706).
- Change of Use: see s. 912.8.1 which refers to s. 605 (and 706) for partial change of occupancy or s. 912.8.2 which provides a list of required accessibility upgrades including toilet rooms for a complete change of occupancy.
- Additions: see s. 1005.1 which requires the addition to be accessible but also refers to s. 605 (and 706) for additions that affect or contain an area of primary function.

IEBC s. 605.2 Alterations to primary function.

Where an alteration affects the accessibility to a, or contains an area of, primary function, the route to the primary function area shall be accessible. The accessible route to the primary function area shall include toilet facilities or drinking fountains serving the area of primary function.

Exceptions

- The costs of providing the accessible route are not required to exceed 20% - i.e. disproportionality
- Does not apply to alterations limited solely to windows, hardware, operating controls, electrical outlets and signs
- Does not apply to alterations limited solely to mechanical systems, electrical systems, installation or alteration of fire protection systems, and abatement of hazardous materials
- Does not apply to alterations undertaken solely for the purpose of increasing accessibility

Question 9: What are some other items that are often overlooked when evaluating an addition to an existing building for code compliance.

Answer 9: Some commonly overlooked items include the following:

- Accessible features in the existing building – see previous Q&A
- Impact of the addition on the existing building egress – evaluation of common path of travel, exit access travel distance, egress width, exit distribution, etc. will often require floor plans showing exits in the existing building
- Increase in occupant load and need for additional sanitary fixtures

Question 10: I am installing a new break room in my building and was told that it may have to meet some accessibility standards, is that true and what should I design for?

Answer 10: Yes, break rooms are required to be accessible. IBC section 1109.4 requires that kitchen and kitchenettes provided in accessible rooms or spaces shall comply with the ANSI A117.1 accessibility standard. ANSI A117.1 section 804 details the accessibility requirements of kitchens.

Question 11: Scenario: Existing building constructed before the adoption of the IBC. The building has existing corridors that are not rated, however if the building was constructed today the occupant load of the corridors would dictate that they be constructed of one hour construction per IBC table 1018.1.

Question: When remodeling the building if new doors or openings are added to the corridor would they be required to be rated?

Answer 11: No. As long as a new corridor is not being constructed the new doors would not have to be rated. IEBC section 701.3 would require new construction elements to comply with the current IBC requirements. In this example the corridor is not a new element the door is. Therefore a rating would not be required for the door unless triggered by IEBC s. 705.5. The door would need to comply with IBC section 1008.

Question 12: Where two buildings of different lengths are separated by a fire wall, can the length of the fire wall be extended beyond the common wall of the buildings to include the exterior wall of the larger building, such that I can exceed the 25 percent limitation on the length of openings located in the portion of the wall that is common with the smaller building?

Answer 12: The following answer is from a FAQ on the department website.

No. The percentage of openings in the fire wall between the buildings is limited to the length of the common wall, plus the length of extensions that are required. Although we will allow the length used to determine the allowable openings permitted by IBC section 706.8 to include the length of **required** extensions, we will not allow larger extensions beyond those specified within IBC section 706.5. (September 1, 2011).

Question 13: When is a Type I or Type II kitchen exhaust hood required for a "commercial cooking appliance” or commercial dishwashing appliance?

Answer 13: The following again is from an FAQ on the department website.

The definition of commercial cooking appliance under IMC Section 202 and the kitchen exhaust hood provisions under IMC 507.2 do not provide specific demarcations to answer this question for every situation and circumstance. Whether a cooking appliance is a commercial cooking appliance depends upon several variables and factors, including the nature of use, the frequency of use, the type of appliance, and even the type of food involved.

IMC 202 broadly defines a commercial cooking appliance as appliances that produce "grease [laden] vapors, steam, fumes, smoke, or odors that are required to be removed" from a commercial “food service establishment." A food service establishment is even more broadly defined as including any building or portion thereof used for the preparation and serving of food. *IMC s. 507.2.3 requires domestic cooking appliances utilized for commercial purposes shall be provided with Type I or Type II hoods as required for the type of appliances and processes in accordance with Sections 507.2, 507.2.1 and 507.2.2.*

The italicized sentence above was recently added to clarify that appliances listed as ‘residential’ or ‘domestic’ may still be classified as a commercial cooking appliance requiring a type I hood.

A dwelling unit, or either a dorm room or hotel sleeping room with a stove, oven, microwave, coffee maker, or toaster does not constitute a food service establishment. In addition, either an employee break room or a hotel/motel breakfast bar with microwaves, coffee makers, and toasters does not constitute the type of food service establishment that would warrant a full blown kitchen ventilation system. None of these facilities are primarily in the business of preparing the types or quantities of food normally associated with a commercial kitchen and accordingly, neither a Type I nor a Type II exhaust hood is required for these facilities.
However, this still leaves a wide variety of occasions, situations, and operations in "commercial buildings" where food is prepared and sold, such as restaurants, taverns, cafeterias serving hospitals or dormitories, concession stands serving high school gymnasiums, and domestic kitchen facilities in church basements and convenience stores. In some instances, food-preparation appliances are brought in temporarily, adjunct to another activity. A popcorn wagon or completely enclosed popcorn machine provided for a high school basketball game is an example. This type of appliance and the frequency of its use under these circumstances would not constitute a "commercial cooking appliance". Many convenience stores offer, besides coffee, a hot dog or a slice of pizza. Warming trays, ovens, or containers (e.g. crock pots) for such items as hot dogs or pre-cooked bratwursts, and enclosed single-pizza ovens at convenience stores are not pre-determined to be "commercial cooking appliance." If the appliance is not a "commercial cooking appliance," a Type I or II hood under IMC 507 is not required.

"Commercial cooking appliances", such as those used in cafeterias, restaurants, dormitory kitchens, school kitchens, institutional kitchens, and banquet facility kitchens, that produce grease-laden vapors must be provided with a Type I hood. These appliances include deep fryers, griddles, tilting skillets or woks, braising and frying pans, charbroilers, salamander and upright broilers, infrared broilers, stoves and ranges, and barbecue equipment. Also, the type of food being prepared is a factor in whether grease-laden vapors are produced with the appliance. Commercial cooking appliances which are used in such facilities and which produce copious amounts of steam and considerable smoke, or fumes, but not grease-laden vapors or copious amounts of smoke, must be provided with at least a Type II hood. These include steamers, completely enclosed ovens, and warming ovens.

Also, under IMC 917.1, a Type I or II hood may be necessary for a permanent cooking appliance in order to fulfill the listing requirements or instructions from the manufacturer of the appliance. (June 30, 2008)

Question 14: What protection is required for a duct penetration through the ceiling membrane of a fire resistance rated floor/ceiling or roof/ceiling assembly? IBC 708.2, IBC 712.4, 712.5 and 712.7, IBC 713.1.1, IBC 713.4.1.2, IBC 713.4.1.4, IBC 716.1, IBC 716.1.1, and IBC 716.7.

Answer 14: It depends on the type of duct penetration and what types of tested and listed protection components are available for the particular application. A fire resistance rated floor/ceiling or roof/ceiling assembly is required to be constructed as a horizontal assembly meeting the requirements of s. 712. The applicable code sections are reprinted in part below:

IBC 708.2 Shaft enclosure required. Openings through a floor/ceiling assembly shall be protected by a shaft enclosure complying with this section.

IBC 712.4 Continuity. Assemblies shall be continuous without openings, penetrations, or joints except as permitted by this section and Sections 708.2, 713.4, 714 and 1022.1.

IBC 712.5 Penetrations. Penetrations of horizontal assemblies shall comply with Section 713.

IBC 712.7 Ducts and air transfer openings. Penetrations in horizontal assemblies by ducts and air transfer openings shall comply with Section 716.

IBC 713.1.1 Ducts and air transfer openings. Penetrations of horizontal assemblies not protected with a shaft as permitted by Exception 4 of Section 708.2, and not required to be protected with fire dampers by other sections of this code, shall comply with Sections 713.4 through 713.4.2.2. Ducts and air transfer openings that are protected with *dampers* shall comply with Section 716.

IBC 713.4.1.2 Membrane penetrations. Penetrations of membranes that are part of a horizontal assembly shall comply with 713.4.1.1.1 or 713.4.1.1.2.

IBC 713.4.1.4 Dissimilar materials. Noncombustible penetrating items shall not connect to combustible materials beyond the point of firestopping unless it can be demonstrated that the fire-resistance integrity of the horizontal assembly is maintained.

IBC 716.1 General. The provisions of this section shall govern the protection of duct penetrations and air transfer openings in assemblies required to be protected.

IBC 716.1.1 Ducts that penetrate fire-resistance rated assemblies without dampers. Ducts that penetrate horizontal assemblies not required to be contained within a shaft and not required by this section to have dampers shall comply with the requirements of Sections 713.4 through 713.4.2.2.

IBC 716.7 Flexible ducts and air connectors. Flexible ducts and air connectors shall not pass through any fire resistance rated assembly.

A ceiling membrane penetration does not create an opening through a floor/ceiling assembly therefore Section 708.2 does not require a shaft enclosure. Section 712.7 requires penetrations of horizontal assemblies by ducts and air transfer opening to comply with s. 716 and s. 716.1.1 states where a shaft is not required and dampers are not required the penetration shall comply with 713.4 through 713.4.2.2. Section 713.1.1 makes it clear that not all penetrations are required to be protected with either shaft enclosures or dampers but in cases where neither is appropriate or applicable, penetrations of horizontal assemblies shall comply with 713.4 through 713.4.2.2. Horizontal fire dampers are for through penetrations of horizontal assemblies and generally have been tested and listed for use in masonry and concrete floor assemblies. Ceiling radiation dampers are generally tested and listed for use at air outlet or inlet terminals (i.e. ceiling supply air diffusers and return air grilles). Other protective assemblies for use at a ductwork ceiling termination that may be part of a tested and listed fire resistance rated horizontal assembly and would not require the use of a ceiling radiation damper include Air Terminal Units (UL product category BZGU) and Ceiling Air Diffusers (UL product category BZZU).

Section 716.6.2 does not require a fire damper or ceiling radiation damper for a ceiling membrane penetration by ductwork that does not terminate at a supply air diffuser or return air grille. In cases where continuous non-combustible ductwork penetrates a ceiling membrane, tested and listed dampers are not appropriate and therefore the penetration shall comply with 713.4 through 713.4.2.2. Section 713.4.1.2 requires that penetrations of membranes that are part of a horizontal assembly shall comply with section 713.4.1.1.1 or 713.4.1.1.2, either installed as tested in the approved fire-resistance rated assembly or protected with a through penetration firestop system respectively. Section 716.7 prohibits flexible duct and air connector penetrations of fire resistance rated assemblies and Section 713.4.1.4 prohibits connection of non-combustible penetrating items to combustible materials. Therefore continuous ductwork penetrating a ceiling membrane must be continuous metal ductwork from the appliance to the air outlet or inlet terminal. Where continuous ductwork penetrates a ceiling membrane and does not terminate at a supply air diffuser or return air grille the annular space around the duct penetration shall be protected by an appropriately tested and listed through penetration firestop system.
See also the Q&A for IBC 708.4, 711.3 and 717.4.2 which indicates a fire resistance rated roof/ceiling assembly is not required to satisfy the dwelling and sleeping unit separation requirements of s 420.

Some example scenarios and available or alternative protection components/requirements follow:
1. Ceiling membrane duct penetration with a supply air diffuser mounted in the plane of the ceiling membrane. An appropriately tested and listed Ceiling Radiation Damper (tested for dynamic airflow conditions as necessary) shall be provided. If one is not available for the specific application or as an alternative a Ceiling Air Diffuser may be provided as indicated in the tested and listed fire resistance rated assembly or Duct Outlet Protection System A or B as described in the guide information for the assemblies in the UL Directory.

2. Ceiling membrane duct penetration with a return air grille mounted in the plane of the ceiling membrane. An appropriately tested and listed Ceiling Radiation Damper (tested for dynamic airflow conditions as necessary) shall be provided. If one is not available for the specific application or as an alternative an Air Terminal Unit may be provided as indicated in the tested and listed fire resistance rated assembly or Duct Outlet Protection System A or B as described in the guide information for the assemblies in the UL Directory.

3. Ceiling membrane duct penetration by continuous noncombustible metal ductwork from the supply plenum of an upflow furnace and direction of airflow into the floor/ceiling assembly above. Appropriately tested and listed Ceiling Radiation Dampers, Ceiling Air Diffusers, Air Terminal Units, or Fire Dampers are likely not available for this configuration nor would the UL Duct Outlet Protection Systems be appropriate. Therefore the annular space around the noncombustible penetrating ductwork must be protected with a tested and listed through penetration firestop system.

4. Ceiling membrane duct penetration by continuous noncombustible metal ductwork on the return side of an upflow furnace and direction of airflow out of the floor/ceiling assembly above. Appropriately tested and listed Ceiling Radiation Dampers, Ceiling Air Diffusers, Air Terminal Units, or Fire Dampers are likely not available for this configuration nor would the UL Duct Outlet Protection Systems be appropriate. Therefore the annular space around the noncombustible penetrating ductwork must be protected with a tested and listed through penetration firestop system.

Question 15: What are a couple of commonly overlooked structural items that frequently result in plans being held.

Answer 15: Commonly overlooked items are changes in roof height and rooftop equipment.

Snow drift loads: If an addition to an existing building has a higher roof height the plan submittal must include calculations of the drift load created on the lower roof and showing that either the existing structural members are adequate or showing the alterations and reinforcement necessary to support the new drift load.

Rooftop HVAC Equipment: Often an HVAC submittal will include rooftop equipment but the building plans and structural calculations didn't. The HVAC plans will be held until structural calculations are submitted showing the roof system is adequate or showing the alterations and reinforcement necessary to support the rooftop equipment.

Question 16: When do alterations to an existing building trigger the requirements for interior and exterior emergency egress lighting?

Answer 16: A change of occupancy to a higher hazard category per Table 912.4 must meet all requirements of Chapter 10 of the IBC throughout the change of occupancy and the means of egress serving it including exit discharge illumination.

If the alteration is a Level 3 alteration classified in s. 405.1 as an alteration where the work area exceeds 50 of the aggregate area of the building, (remember that work area is defined as reconfigured space as indicated on the construction documents), then per IEBC s. 805.2 the means of egress from the highest work area floor to the floor of exit discharge shall be provided with artificial lighting *within the exit enclosure* in accordance with the requirements of the IBC.

If the alteration is a Level 2 alteration, per IEBC 705.7.1 means of egress illumination per the IBC must be provided throughout the work area and per 705.7.2 supplemental requirement *throughout the floor* when the work area exceeds 50% of the floor area.

Exit discharge illumination: In summary alterations will not require emergency egress illumination of the exit discharge but a change of occupancy will.

Question 17: What are the requirements for homeless shelters in existing buildings?

Answer 17: As with any project it depends upon the scope of work and whether it is a change of occupancy. Typically there is minimal alteration work but often it is a change of occupancy. Consider the following 4 common scenarios…

1) A church or other non-profit group providing advocacy for the poor may request a temporary use in order to facilitate stays of families or homeless through a municipal building or fire code official as allowed by SPS 361.03(12). Note that a temporary use has a definite end date and should be differentiated from an ongoing seasonal use. Note that neither temporary buildings or seasonal use buildings are exempt from the code. If a temporary use persists, municipal officials may require that the building be reviewed by a registered design professional for a change of use and required alterations to meet code. The scope of work may require plan submittal to the Dept. or the appropriate delegated municipality.

2) A homeless shelter is proposed to be located in a one or two family dwelling – UDC.

Per SPS 366.0101(2) this is a change of use from a non-commercial building to a commercial building (public building or place of employment) and therefore shall comply with the IBC for new construction – structural evaluation, sprinkler requirements, accessibility, etc. which may not be feasible.

3) A homeless shelter is proposed in an existing church rectory or convent.

The rectory may have been UDC so the previous scenario would apply – comply as new construction. Otherwise the rectory was probably R-2 or R-3 congregate living and the homeless shelter may be R-1 or R-2 depending on transient or non-transient use. If it is a change of occupancy classification within the R group sprinklers would be required per IEBC s. 912.2.1.

A convent was probably previously approved as commercial use and therefore can be evaluated using the IEBC. However, a typical convent was probably an R-2 use and the change to homeless shelter may be R-1 transient or R-2 non-transient depending on typical length of stay. If it is an R-1 transient occupancy this would be a change of occupancy classification requiring sprinklers per IEBC s. 912.2.1.

4) Homeless shelter proposed to be located in a previous non-residential commercial use (A, B, F, M, S, E, etc.). This would be a change of use and needs to be evaluated for compliance with IEBC chapter 9. The change of occupancy will likely require sprinkler and fire alarm systems and smoke detection and possible accessibility upgrades which may not be feasible.

Question 18: Changes in insulation types occur commonly in the field. What information if any is required to demonstrate code compliance of spray applied barrier or intumescent products installed over spray-on foam plastic insulation?

Answer 18: It depends.

A typical change is to substitute a spray on foam plastic insulation for fiberglass insulation. Depending on the location of the foam plastic insulation it may need to be protected with either a thermal barrier to separate it from occupied areas of the building or it may need to be protected with an ignition barrier if exposed within an attic or crawl space which already provides a thermal barrier separation due to the floor or ceiling construction.

Thermal barrier requirements are found in IBC s. 2603.4. A thermal barrier is required to limit the average temperature rise of the unexposed surface to not more than 250 degrees after 15 minutes of fire exposure complying with the standard time-temperature curve of ASTM E119 and shall be installed in a manner to remain in place for 15 minutes when tested per FM 4880, UL 1040, NFPA 286 or UL 1715. Inspectors should request product cut sheets demonstrating the product meets the above testing requirements.

Ignition barrier requirements are found in s. 2603.4.1.6 and list acceptable materials such that the foam plastic insulation is not left exposed to the attic or crawl space. Acceptable ignition barriers include 1.5” of mineral fiber insulation, ¼” wood structural panel, particleboard or hardboard, 3/8” gypsum board, corrosion resistant steel having a base metal thickness of 0.016 inch “or other approved material installed in such a manner that the foam plastic insulation is not exposed”.

The requirements for an ignition barrier are far less restrictive than those for a thermal barrier. Be sure not to confuse the two. Further many of the spray applied barrier products may only be used with certain types or formulations of insulation and maybe only with matching manufacturer proprietary products. Don’t allow products to mixed and matched if they haven’t been tested in that manner.

Do you have any questions for us?

Thank You!